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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,502	02/25/2004	Guy Wallace Miller	67097-994:PA-10797-US	9894

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EXAMINER	
KIM, TAE JUN	

ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
12/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/785,502	MILLER, GUY WALLACE	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/22/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8,14 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8* is/are allowed.

6)☒ Claim(s) *14 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 14, 15, 21, 23 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: on the last line of the these claims, "a pair of spur gears" lacks any structural cooperative relationship with any other elements so as to effect the connection. Applicant should designate on which shaft each of the "pair of spur gears" is located. Furthermore, "having and a pair" makes no grammatical sense and should be grammatically corrected.

3. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: there is no way for the first and second lay shaft to be connected by an intermediate shaft without any additional gearing.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Brockmann (4,776,163) or Brockmann (4,776,163) in view of Clark (4,525,995), and further in view of Hield et al (5,694,765). Brockmann teaches a gas turbine engine and a mechanical drive system for an accessory gearbox of a gas turbine engine, which engine has a high-pressure drive shaft 3 and a low-pressure drive shaft 2, 6 which engine has a high-pressure drive shaft 3 connected to *a high-pressure compressor and a high-pressure turbine* [these are not illustrated but are inherently present, for its designation as a high pressure rotor, see US patent 4,525,995 for extrinsic evidence]; a low-pressure drive shaft 2, 6 connected to *a low-pressure compressor and a low-pressure turbine* [these are not illustrated but are inherently present, for its designation as a high pressure rotor, see US patent 4,525,995 for extrinsic evidence]; the drive system comprising: a first tower shaft 12 connected by a first gear arrangement to the high-pressure drive shaft 3; a second tower shaft 13 connected by a second gear arrangement to the low-pressure drive shaft 2, 6; a first lay shaft 18 connected by a third gear arrangement to the first tower shaft 12, and connected to the accessory gearbox; and a second lay shaft 17 connected by a fourth gear arrangement to the second tower shaft 13, and connected to the accessory gearbox; wherein the first tower shaft 12 is concentric with the second tower shaft 13; wherein the first lay shaft 18 is concentric with the second lay shaft 17; wherein the third gear

arrangement includes a first bevel gear 11' attached to the first tower shaft 12, and a second bevel gear 9' attached to the first lay shaft 18, wherein the first bevel gear and the second bevel gear are engaged with one another; wherein the fourth gear arrangement includes a third bevel gear 10' attached to the second tower shaft 13, and a fourth bevel gear 8' attached to the second lay shaft 17, wherein the third bevel gear and the fourth bevel gear are engaged with one another. A mechanical drive system for an accessory gearbox of a gas turbine engine, which engine has a high-pressure drive shaft 3 and a low-pressure drive shaft 2, 6, the drive system comprising: a first tower shaft 12 driven by the high-pressure drive shaft; a second tower shaft 13 driven by the low-pressure drive shaft; a first lay shaft 18 driven by the first tower shaft 12, and connected to the accessory gearbox; and a second lay shaft 17 driven by the second tower shaft 13, and connected to the accessory gearbox; wherein the first tower shaft 12 is concentric with the second tower shaft 13; wherein the first lay shaft 18 is concentric with the second lay shaft 17; wherein a first gear arrangement connects the first tower shaft 12 to the first lay shaft 18, and the first gear arrangement includes a first bevel gear 11' attached to the first tower shaft 12, and a second bevel gear 9' attached to the first lay shaft 18, wherein the first bevel gear and the second bevel gear are engaged with one another; wherein a second gear arrangement includes a third bevel gear 10' attached to the second tower shaft 13, and a fourth bevel gear 8' attached to the second lay shaft 17, wherein the third bevel gear and the fourth bevel gear are engaged with one another. Brockmann teaches a high pressure rotor and low pressure rotor and the respective high and low pressure

compressor and turbines were regarded as inherently present. Alternatively, in order to obviate any doubt, Clark teaches the gas turbine engine has a high-pressure 14 drive shaft 30 connected to a high-pressure compressor 34 and a high-pressure turbine 36; a low-pressure 12 drive shaft 20 connected to a low-pressure compressor 26 and a low-pressure turbine 28 (col. 2, lines 19-32). It would have been obvious to one of ordinary skill in the art to employ the compressors and turbines respectively on the high and low pressure rotor/shafts, as taught by Clark, as the conventional practice in the art. Brockmann teaches various aspects of the claimed invention but do not teach the first lay shaft is disposed spaced apart from and parallel to the second lay shaft and connected by a intermediate shaft, rather these shafts are concentric. Hield et al teach a shaft arrangement 40, 188, (Fig. 5) which are spaced apart from and parallel rather than concentric and connected to each other by an intermediate shaft 198. It would have been obvious to one of ordinary skill in the art to employ a parallel and spaced apart arrangement for the lay shafts with an intermediate shaft as an equivalent configuration to concentric.

6. Claims 14, 15, 21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Brockmann (4,776,163) or Brockmann (4,776,163) in view of Clark (4,525,995), and further in view of Hield et al (5,694,765), as applied above, and further in view of Steward, Jr et al (5,309,708). The Brockmann combination, as applied above, does not teach the use of a pair of spur gears. Hield et al further teach gearboxes 182 and 42 which connect via an intermediate shaft to the two parallel shafts but do not show the

gearing inside the gearboxes to the shafts. Stewart, Jr et al illustrate the use of pairs of spur gears in the gearbox 72 to connect the shafts together, where the spur gears are known by definition to be gear wheels that mesh in the same plane. Note that the use of spur gears is also one of the most conventional and widespread types of gearing used in the art. It would have been obvious to one of ordinary skill in the art to employ spur gears in the connecting arrangement of the Brockmann combination, as applied above, in order to utilize a conventional and widespread type of gearing used in the art, including in the gearbox art.

Allowable Subject Matter

7. Claim 8 is allowed.

Response to Arguments

8. Applicant's arguments filed 10/22/2007 have been fully considered but they are not persuasive. As applicant's arguments only address the new limitations introduced by amendment, these are dealt with above as being within the scope of the prior art, including the previously applied grounds of rejection using either Brockmann (4,776,163) or Brockmann (4,776,163) in view of Clark (4,525,995), and further in view of Hield et al (5,694,765).

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax number for the organization where this application is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer, can be reached at 571-272-7118. Alternate inquiries to Technology Center 3700 can be made via 571-272-3700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). General inquiries can also be directed to the

Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm

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